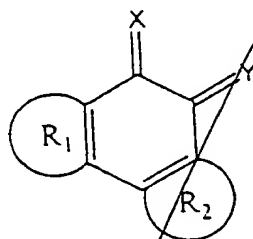
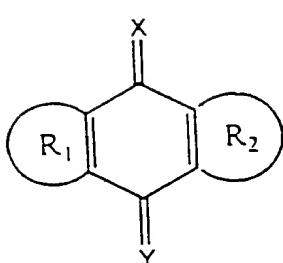


Claims:

1. A single use disposable electrode strip for attachment to the signal readout circuitry of a sensor system to detect a current representative of an analyte in an aqueous sample, the strip comprising:

- a) an elongated support having a substantially flat, planar surface, adapted for releasable attachment to said readout circuitry;
- b) a first conductor extending along said surface and comprising a conductive element for connection to said readout circuitry;

an active electrode on said surface in contact with said first conductor, said active electrode comprising a nicotinamide cofactor-dependent enzyme, a nicotinamide cofactor, and a mediator compound having one of the following two formulae:



where X and Y can independently be oxygen, sulphur, CR^3R^4 , NR^3 , or NR^3R^4 or the functional group CZ^1Z^2 , where Z^1 and Z^2 are electron withdrawing groups; R_1 and R_2 can independently be a substituted or unsubstituted aromatic or heteroaromatic group; and R^3 and R^4 can independently be a hydrogen atom, a hydroxyl group or a substituted or unsubstituted alkyl, aryl, heteroaryl, amino, alkoxyl, or aryloxyl group.

wherein said active electrode is formulated with filler and binder ingredients such that said electrode gives a

monotonic response to concentrations of said analyte
between about 1 and 8 mM when measurement is made in a
kinetic mode in which simultaneous oxidation and
reduction of the mediator occurs during the measurement;

- Sub B1
- c) a second conductor extending along said surface,
comprising a conductive element for connection to
said readout circuitry;
 - d) a reference/counter electrode in contact with said
second conductor;
 - e) said conductors being spaced apart so as not to be
in electrical contact and being configured so as not
to be brought into electrical contact when said
aqueous sample is placed on said strip;
 - f) said active electrode and said reference/counter
electrode being configured so that both may be
simultaneously covered by a small drop of said
aqueous sample to provide an electrical
conduction path between said electrodes.

2. The electrode strip of Claim 1 wherein the mediator compound is 1, 10-phenanthroline quinone.

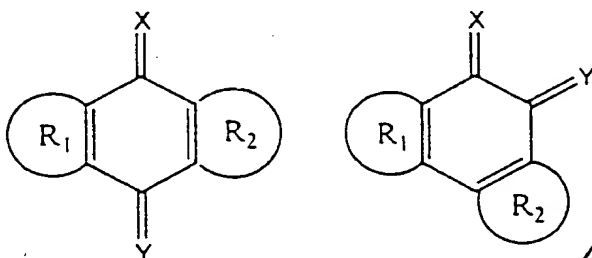
3. The electrode strip of Claim 2 wherein the cofactor-dependent enzyme is Glucose Dehydrogenase.

4. The electrode strip of Claim 2 wherein the cofactor-dependent enzyme is 3-Hydroxybutyrate Dehydrogenase.

5. A process of measuring the concentration in an aqueous sample of an analyte subject to oxidation by a NAD(P)^+ dependent enzyme comprising

a) oxidizing the analyte with the NAD(P)^+ dependent enzyme in the presence of NAD(P)^+ ;

oxidizing the NAD(P)H generated by reaction with the analyte and NAD(P)^+ dependent enzyme with a mediator compound having one of the following two formulae:



where X and Y can independently be oxygen, sulphur, CR^3R^4 , NR^3 , or NR^3R^4 or the functional group CZ^1Z^2 , where Z^1 and Z^2 are electron withdrawing groups; R_1 and R_2 can independently be a substituted or unsubstituted aromatic or heteroaromatic group; and R^3 and R^4 can independently be a hydrogen atom, a hydroxyl group or a substituted or unsubstituted alkyl, aryl, heteroaryl, amino, alkoxyl, or aryloxy group; and

b) applying an electrical potential at an electrode to reoxidize the mediator compound reduced in oxidizing NAD(P)H and observing the resultant current.

wherein some of the mediator compound is being reduced by reaction with NAD(P)H while some of the mediator compound is being oxidized by transfer of electrons to said electrode during a measurement period and the rate of oxidation of the mediator compound over said measurement period and consequently the resultant observed current is monotonically related to the concentration of analyte in the sample.

6. The process of Claim 5 wherein the NAD(P)⁺ dependent enzyme, NAD(P)⁺ and mediator compound have been applied to the surface of said electrode in combination with a binder and a filler.

Sub B3 7. The process of Claim 6 wherein the current observed during the measurement period is linearly related to the concentration of the analyte in the sample.

8. The process of Claim 5 wherein the mediator component is 1, 10-phenanthroline quinone.

Sub B4 9. The process of Claim 8 wherein the cofactor-dependent enzyme is Glucose Dehydrogenase.

10. The process of Claim 8 wherein the cofactor dependent enzyme is 3-Hydroxybutyrate Dehydrogenase.

11. The process of Claim 5 wherein the applied potential is 200 mV or less.

add a4

add B5